

## STAIRWELL LIGHTING OPERATES NEEDLESSLY

Stairwells are lit 24 hours per day regardless of occupancy. In stairwells with high-wattage light fixtures (T12s or T8s), 24-hour use can lead to a significant and unnecessary waste of electricity.

Although occupancy sensors are widely available to switch off stairwell lighting during unoccupied periods, they require custom installations and do not provide illumination during unoccupied periods, as required by code.

In contrast, a new bi-level stairwell fixture with integrated occupancy sensors are easy to install and even easier to operate—they're automatic! The system is designed to provide safe, reliable, and efficient lighting with high illumination during occupied periods and reduced illumination when stairwells are vacant. However, building owners and code officials have had little exposure to these emerging fixtures.

PIER researchers installed bi-level fixtures from LaMar Lighting in four buildings, ranging from a 5-story commercial office to a 10-story university classroom/office. The team monitored occupancy schedules and energy use and experienced no code issues.

The bi-level fixture has no special installation requirements and has standby wattage consumption as low as 8 watts using a one-lamp 25-watt T8 fixture.

## BI-LEVEL STAIRWELL FIXTURE RESEARCH STUDY

*WORKING WITH THE INTERNATIONAL FACILITY  
MANAGEMENT ASSOCIATION (IFMA), RESEARCHERS  
MONITORED BI-LEVEL FIXTURES IN FOUR CALIFORNIA  
SITES, MEASURING OCCUPANCY USE PATTERNS,  
ENERGY SAVINGS, AND INSTALLATION COST.  
RESULTS INDICATE STANDBY OPERATION 15 TO 40  
PERCENT OF THE TIME FOR LOWER FLOORS AND 60  
TO 90 PERCENT FOR UPPER FLOORS, VARYING  
BETWEEN WEEKDAYS AND WEEKENDS.  
ENERGY SAVINGS TOTALED 40 TO 60 PERCENT.*



*Bi-level stairwell fixture*

## CUT ENERGY USE WHILE PROVIDING CONTINUOUS LIGHTING

Bi-level stairwell fixture technology provides peace of mind by offering standby lighting levels for safety and security when the space is unoccupied, and full light output when the space is occupied.

### Benefits

- Standby operation meets code minimum illumination requirements
- Typical 40–60 percent energy savings provides 3–8 year simple payback depending on existing lighting and new versus retrofit applications
- Various models are available to meet most applications:
  - One- or two-lamp fixtures
  - 120-volt or 277-volt models
  - Bi-level, step-down ballasts to 5, 10, or 33 percent of full light output (i.e., two 4-ft T8s with step down to 10 percent reduces power from 62 watts at full output to 13 watts at standby)
- Integrated ultra-sonic motion sensor simplifies design, purchase, and installation
- 100-hour lamp conditioning circuit assures long lamp life
- Adjustable time in full output operation ranges from 15 seconds to 30 minutes
- Emergency operations options available
- Five-year factory warranty on all ballasts and sensor components.

## INTERESTED?

Building owners, facility managers, contractors, design engineers, building code developers, and utility staff can leverage the bi-level stairwell lighting study results in their future efforts.

Key next steps include:

- Identify buildings with stairwells that are overlit or using high-wattage fixtures
- Identify utility financial incentives to offset initial cost and publicize availability to lighting designers and contractors
- Publicize energy savings and cost-effectiveness results to building owners, lighting designers, and contractors
- Standardize this technology for use in new stairwells
- Inform code officials about successful applications and acceptance in numerous code jurisdictions

To learn more about the system, visit [www.occusmart.com](http://www.occusmart.com).

This project was part of the PIER Lighting Research Program. To view the project results, as well as other current research activities, visit [www.energy.ca.gov/pier](http://www.energy.ca.gov/pier).

Additional information about this technology can be found on the following websites:

- PIER contractor site:  
[www.archenergy.com/lrp/lightingperf\\_standards/project\\_5\\_1\\_impacts.htm](http://www.archenergy.com/lrp/lightingperf_standards/project_5_1_impacts.htm)
- PIER researcher site:  
[http://lighting.lbl.gov/l\\_controls.html](http://lighting.lbl.gov/l_controls.html)



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## BI-LEVEL STAIRWELL FIXTURE



THE RIGHT STAIRWELL  
LIGHT LEVEL WHEN  
NEEDED



Public Interest  
Energy Research